Remarks

The undersigned's Remarks are preceded by related comments of the Examiner, presented in small bold-faced type.

2.   Claims 1- 29 are rejected under 35 U.S.C. 102(a) as being anticipated by Bentley et al., US patent no. 6,063,128.

As per claim 1, Bentley anticipates a method and system for designing and modeling objects in computer aided system with feature limitation identical to the claimed invention (Summary of the Invention). According to Bentley, the computer aided design method includes steps

The undersigned respectfully requests that the Examiner clarify what is meant by "feature limitation identical to the claimed invention". What part of the claim is the Examiner referring to when he compares Bentley's "Summary of the Invention" to purportedly "identical" "feature limitation"? The undersigned simply does not understand how Bentley's "Summary of the Invention" is being applied to show anticipation of claim limitations under 102(a), and additional explanation by the Examiner is required in order for the undersigned to present remarks responsive to this point.

Constructing a feature of a three dimensional model based on data input by a user (col. 40, line 30 to col. 48, line 64), and

Automatically identifying an object or a part configured to compatibly couple with the feature, the part being identified based on design attribute of the object feature (col. 48 to col. 50, line 65).

The Examiner's rejection is respectfully traversed. It is respectfully submitted that, contrary to the Examiner's suggestion, Bentley fails to teach or suggests a method for construction of a model of a three dimensional object using a computer aided design system that includes constructing a feature of the three dimensional model based on data input by a user and, based on design attributes of that three dimensional model feature automatically identifying a part configured to compatibly couple with the feature.

Generally speaking, the Bentley disclosure is addressed to a "computerized modeling system ("CMS") that electronically models engineering information for design, analysis, manipulation, simulation, visualization, integration, decomposition, storage and retrieval." (Bentley, Col. 4, lines 32-42). The undersigned understands that what Bentley addresses is NOT the creation of 3D Models themselves (though Bentley can manage the data representing those models), but rather, Bentley is understood as being concerned with the handling of the associated data and the ability to create, store, and interchange data between various modeling systems. Thus, Bentley's subject matter is quite different from that of the present invention. Moreover, it

is respectfully submitted that Bentley does not attempt to solve the problem addressed by the current invention, nor does Bentley suggest how to do so.

The present invention is quite different from what is disclosed by Bentley and is directed to modeling features of three dimensional objects and determining compatible coupling between parts and those features. For example, if a CAD system user models a mechanical device with a bolt hole (in this example, the bolt hole being the "feature" referred to in the claim phrase "constructing a feature of a three dimensional model based on data input by a user"), then the present invention will automatically determine parts configured to compatibly couple with that bolt hole feature. For example, the system may identify several different-length bolts each having a shaft dimension and threading that will enable compatible coupling with the bolt hole. In this case, bolt hole dimension and thread characteristics are the "design attributes of the feature [i.e., design attributes of the bolt hole]" that were used to determine the several different length bolts that could compatibly couple with the bolt hole. Such "automatically identifying" of a "part configured to compatibly couple" is not shown or suggested in Bentley.

The Examiner, in his comments, cites to a rather lengthy passage in Bentley (i.e., to col. 48 through col. 50, line 65), in support of the proposition that Bentley contains disclosure relevant to the claims of the present invention. However, the Examiner does not specifically point out how the cited reference supports the Examiner's assertion that the referenced text discloses "Automatically identifying an object or a part configured to compatibly couple with the feature, the part being identified based on design attribute of the object feature". It is respectfully submitted that the cited text does not provide the support suggested by the Examiner's comments. More particularly, it is respectfully submitted that, contrary to the Examiner's suggestion:

1. Bentley <u>does not disclose or suggest</u> automatically identifying a part comprising a model of another three-dimensional object and the part is identified based on design attributes of the feature of a three-dimensional model of a real-world object, as recited by claim 1;

2. Bentley <u>does not disclose or suggest</u> that a part identified based on design attributes of a feature of the three-dimensional model is <u>configured to compatibly couple with a feature</u> of the three dimensional model of a real-world object.

That is, Bentley, col. 48 through col. 50 is not directed to the construction of three dimensional models and automatic identification of parts of three-dimensional models as recited by claim 1. Rather, the disclosure found at Bentley col. 48 through col. 50 is a more general discussion of software programming languages and data structures. More particularly, the undersigned understands the cited sections of Bentley's disclosure to relate to the following:

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- Generally speaking, Bentley col. 48 lines 1-30 discuss software "objects." These "objects" are not three-dimensional models, as recited by claim 1, but rather refer to a particular type of programming/data structure arrangement used in an "object oriented" programming language, such as the C++ language.

- Bentley col. 48 lines 31- col. 48 lines 64 discuss "properties" and "methods" of a software object. Here, again, Bentley is referring generally to a particular programming style ("object oriented" programming). Bentley's discussion of a "property" merely refers to a way in which a programmer can obtain information about "objects." Although Bentley discloses an example of an object that could be used in a CAD/CAM system (i.e., a circle having a center point), Bentley's discussion of this object is, at best, tangential to the claimed invention insofar as the claimed invention requires determining a design attribute of a feature of a three-dimensional model <u>configured to compatibly couple with a feature</u> of a three dimensional model of a real-world object, and this is not disclosed or suggested by Bentley.

- Bentley col. 48 line 65 – col. 50 line 65 continues with a discussion of the use of an object oriented system to create "objects" that can be accessed by CAD systems. Generally speaking, col. 48 line 65 – col. 50 line 65 is understood as relating to a data storage and retrieval model (in particular, to a model for storing data in a remote and/or distributed manner). As disclosed at Col. 50 of Bentley, this storage model can be used in CAD/CAM applications; however, it is respectfully submitted that the mere fact that Bentley's storage model can be used in a CAD/CAM application is largely irrelevant to the claims of the present invention as Bentley's disclosure of this storage model does not teach or suggest the identification of compatibly coupling three dimensional parts of a model of an object as recited by claim 1.

In summary, Bentley at col. 48 through col. 50 appears to disclose general concepts relating to the management of data structures (i.e., "objects") in an object-oriented programming environment, rather than the particular development of features of three-dimensional models and the determination of parts that can couple to those model features, as recited by claim 1. For further explanation of Bentley's disclosure, the undersigned respectfully suggests that the Examiner review Bentley at Fig. 20 (col. 46, line14), which describes a grouping mechanism for using multiple persistent stores (col. 45, line 62) and presents a single set of model objects, where the term object refers to a code construct in an object-oriented program, to a computerized modeling system (CMS) user (col. 46, lines 1-2).

It is respectfully submitted that the Examiner's rejection of claim 1 is not supported by the cited reference for at least the reason that Bentley does not disclose or suggest automatically identifying a part comprising a model of another three-dimensional object where said part is configured to compatibly couple with a feature of a three dimensional model of a real world object and where that compatible coupling is determined based on design attributes of the

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feature" as recited by claim 1. Accordingly, for at least the foregoing reasons, it is respectfully requested that the Examiner withdraw the rejection of claim 1 and allow the claim.

If the above-presented remarks do not sufficiently inform the Examiner of Bentley's failure to teach or suggest the recited claim limitations, the undersigned would welcome a call from the Examiner and the undersigned will gladly provide additional explanation to assist the Examiner in his determination of patentability.

Claims 2 – 6 depend from claim 1 and are patentable for at least the reasons stated with respect to claim 1.

> **As per claim 7, Bentley anticipates a method and system for designing and modeling objects in computer aided system with feature limitation identical to the claimed invention (Summary of the Invention). According to Bentley, the computer aided design method includes steps**
>
> **Constructing a feature of a three dimensional model based on data input or receive from a user (col. 40, line 30 to col. 48, line 64), and**
>
> **Automatically identifying an object or a part configured to compatibly couple with the feature, the part being identified based on design attribute of the object feature (col. 48 to col. 50, line 65).**

The Examiner's rejection of claim 7 is substantially identical to the Examiner's rejection of claim 1. For reasons substantially identical to those stated with respect to claim 1, it is respectfully submitted that Bentley does not disclose or suggest the invention recited by claim 7. For example, Bentley does not disclose or suggest constructing a feature of a three-dimensional design model of a real-world object based on data received from a user and automatically selecting a part configured to couple with the constructed feature, the part being selected from a parts library, the parts library comprising data representing a plurality of parts and at least one geometric characteristic of each of the parts, as recited by claim 7

Claims 8-11 depend, directly or indirectly, from claim 7 and are patentable for at least the reasons stated with respect to claim 7.

> **As per claim 12, Bentley anticipates a method and system for designing and modeling objects in computer aided system with feature limitation identical to the claimed invention (Summary of the Invention). According to Bentley, the computer aided design method includes steps**
>
> **Constructing a feature of a three dimensional model based on data input by a user (col. 40, line 30 to col. 48, line 64), Querying a component model repository to retrieve a component model based on compatible between part attributes and design feature (col. 43, lines 30-43, cols. 46-49), and**
>
> **Automatically identifying an object or a part configured to compatibly couple with the**

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feature, the part being identified based on design attribute of the object feature (col. 48 to col. 50, line 65).

Claim 12 has been amended to clarify that the recited "feature" represents a physical element of a real-world object and recited "component" models a real-world object. As discussed with respect to Claim 1, Bentley's disclosure is primarily directed to software architecture issues and to the use of object-oriented programming to create and manipulate data structures referred to as "objects." Bentley does not disclose or suggest the generation of features of a model of a real-world object together with the determination of compatibly coupling components as recited by claim 12.

Accordingly, for substantially the same reasons as stated with respect to claim 1, Bentley does not disclose or suggest the invention recited by claim 12. It is respectfully requested that the Examiner withdraw the rejection.

Claims 13- 22 depend, directly or indirectly, on claim 12 and are patentable for at least the reasons stated with respect to claim 12.

As per claim 23, Bentley anticipates a method and system for designing and modeling objects in computer aided system with feature limitation identical to the claimed invention (Summary of the Invention). According to Bentley, the computerized system includes computer program product or codes to perform steps

Constructing a feature of a three dimensional model based on data input by a user (col. 40, line 30 to col. 48, line 64), and

Automatically identifying an object or a part configured to compatibly couple with the feature, the part being identified based on design attribute of the object feature (col. 48 to col. 50, line 65).

Claim 23 has been rejected for substantially the same reasons as Claim 1. Accordingly, and for substantially the same reasons as stated with respect to claim 1, claim 23 is patentable over the cited Bentley reference. It is respectfully requested that the Examiner withdraw his rejection of claim 23 and allow the claim.

Claim 24 depends from claim 23 and is patentable for at least the reasons cited with respect to claim 23.

As per claim 25, Bentley anticipates a method and system for designing and modeling objects in computer aided system with feature limitation identical to the claimed invention (Summary of the Invention). According to Bentley, the computer aided design system includes means for performing steps

Constructing a feature of a three dimensional model based on data input by a user (col. 40, line 30 to col. 48, line 64), Querrying a component model repository to retrieve a component model based on compatible between part attributes and design feature (col. 43, lines 30-43,

cols. 4649), and Automatically identifying an object or a part configured to compatibly couple with the feature, the part being identified based on design attribute of the object feature (col. 48 to col. 50, line 65).

The Examiner's has rejected claim 25 for reasons similar to those presented in the Examiner's rejection of claim 1. For reasons substantially identical to those stated with respect to claim 1, it is respectfully submitted that Bentley does not disclose or suggest the invention recited by claim 25. For example, contrary to the Examiner's suggestion, Bentley does not disclose or suggest constructing a feature of a three-dimensional design model based on input from a user; and query a database to automatically construct a part from a model in the library of model parts, the constructed part being configured to couple with the feature, as recited by claim 25

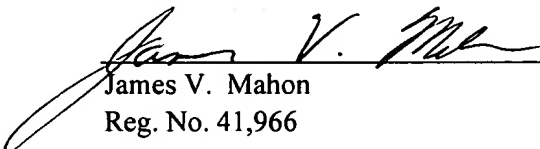Claims 26-29 depend from claim 25 and are patentable for at least the reasons cited with respect to claim 25.

Conclusions

Claims 1-29 are now pending and believed to be in condition for allowance. Applicants respectfully request that all pending claims be allowed.

Please apply any credits or excess charges to our deposit account number 50-0521.

Respectfully submitted,

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